Cutting, Punching, and Press Machine Setters, Operators, and Tenders

Table of Contents *(scroll or use links below to navigate document)*

- What They Do
- Tasks
- Skills, Knowledge, and Abilities
- Work Environment
- California's Job Outlook and Wages
- Trends
- Training
- Where Do I Find the Job?
- Where Can the Job Lead?
- Other Sources

What They Do

Sawing Machine Tool Setters and Set-Up Operators (Metal and Plastic) set up and operate metal or plastic sawing machines to cut straight, curved, irregular, or internal patterns in metal or plastic stock or to trim edges of metal or plastic objects. This involves the use of such machines as band saws, circular saws, friction saws, hacksawing machines, and jigsaws.

Punching Machine Setters and Set-Up Operators (Metal and Plastic) set up and operate machines to punch, crimp, cut blanks, or notch metal or plastic workpieces between preset dies, according to specifications.

Press and Press Brake Machine Setters and Set-Up Operators (Metal and Plastic) set up and operate power-press machines or power-brake machines to bend, form, stretch, notch, punch, or straighten metal or plastic plate and structural shapes, as specified by work order, blueprints, drawing, templates, or layout.

Shear and Slitter Machine Setters and Set-Up Operators (Metal and Plastic) set up and operate power-shear or slitting machines to cut metal or plastic material, such as plates, sheets, slabs, billets, or bars, to specified dimensions and angles.

Tasks

- Read work order for specifications, such as materials to be used, location of holes or cutting lines, and dimensions and tolerances; or production schedule to determine setup or adjustment of equipment.
- Mark identifying data on workpiece.
- Activate machine, adjust blade and controls to set cutting speed, feed rate, and table angle, using wrenches, rule, gauge, or template, and observe operation to detect misalignment or malfunction.
- Inspect workpiece for defects and measure for conformance to specifications using micrometer, tape, gauge, caliper, template, scale, compass, or ruler.
- Clean and lubricate machine.

Sawing Machine Tool Setters and Operators

- Place workpiece on cutting table, manually or using hoist, and clamp workpiece into position.
- Feed workpiece against blade, guiding along layout lines, to cut workpiece to specified dimensions.

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Cutting, Punching, and Press Machine Setters, Operators, and Tenders

- Turn valves to start flow of coolant against cutting area and to start airflow which blows cuttings away from kerf.
- Position guides, stops, holding blocks, or other fixtures to secure and direct workpiece, using hand tools and measuring devices.
- Remove housings, feed tubes, tool holders, and other accessories to replace worn or broken parts, such as springs and bushings.
- Sharpen dulled blades, using bench grinder, abrasive wheel, or lathe.

Punching Machine Setters and Operators

- Position, align, and secure workpiece against fixtures or stops on machine bed or on die.
- Set stops or guides or install jigs or fixtures for positioning successive workpieces.
- Install, align, and lock specified punches, dies, and cutting blades in ram or bed of machine, using gauges and hand tools.
- Adjust ram stroke of press to specified length, using hand tools.
- Install gears to synchronize action of feed bar or rollers.

Press and Press Brake Machine Setters and Operators

- Plan sequence of operations, applying knowledge of physical properties of metal.
- Select and position flat, block, radius, or special purpose die sets into ram and bed of machine, using hoist, crane, measuring instruments and hand tools.
- Install, align, and secure gears, holding fixtures and dies to machine bed, using gauges, templates, feelers, shims, and hand tools.
- Set stops on machine bed, change dies, and adjust components, such as ram or power press, when making multiple or successive passes.
- Operate power press, power brake, apron brake, swagging machine, foot-powered press, hydraulic press, or arbor press according to specifications.
- Preheat workpiece, using heating furnace or hand torch.
- Hand form, cut, or finish workpiece, using tools, such as table saw, hand sledge and anvil, flaring tool, and gauge.
- Grind out burrs and sharp edges, using portable grinder, speed lathe, and polishing jack.

Shear and Slitter Machine Setters and Operators

- Lift workpiece manually or by hoist, and position and secure against guides and stops.
- Install and align knives, disk cutters or fixtures to shear, bevel, or trim fabricated items.
- Select, clean, and install spacers, rubber sleeves, and cutter on arbors.

*Detailed descriptions of these occupations may be found in the Occupational Information Network (O*NET) at online.onetcenter.org.*

Important Skills, Knowledge, and Abilities

- Operation and Control — Controlling operations of equipment or systems.
- Operation Monitoring — Watching gauges, dials, or other indicators to make sure a machine is working properly.

Cutting, Punching, and Press Machine Setters, Operators, and Tenders

- Mathematics — Using mathematics to solve problems.
- Installation — Installing equipment, machines, wiring, or programs to meet specifications.
- Science — Using scientific rules and methods to solve problems.
- Equipment Selection — Determining the kind of tools and equipment needed to do a job.
- Quality Control Analysis — Conducting tests and inspections of products, services, or processes to evaluate quality or performance.
- Reading Comprehension — Understanding written sentences and paragraphs in work-related documents.
- Mechanical — Knowledge of machines and tools, including their designs, uses, repair, and maintenance.
- Production and Processing — Knowledge of raw materials, production processes, quality control, costs, and other techniques for maximizing the effective manufacture and distribution of goods.
- Manual Dexterity — The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.
- Control Precision — The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions.
- Arm-Hand Steadiness — The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position.
- Near Vision — The ability to see details at close range (within a few feet of the observer).
- Information Ordering — The ability to arrange things or actions in a certain order or pattern according to a specific rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).
- Visualization — The ability to imagine how something will look after it is moved around or when its parts are moved or rearranged.
- Written Comprehension — The ability to read and understand information and ideas presented in writing.

Work Environment

Most Cutting, Punching, and Press Machine Setters, Operators, and Tenders (Metal and Plastic) work in clean spaces that are well lit and ventilated. Many workers are on their feet much of the day and may do moderately heavy lifting. Following strict safety precautions, like wearing safety glasses, earplugs, and other protective equipment is critical when operating powerful, high-speed machines. The enclosure of many modern machines minimizes the exposure of workers to noise, dust, and lubricants used during machining. Most work a 40-hour week, but overtime is common during high production times. Many metalworking and plastics shops have more than one shift, so night and weekend shifts may also be worked.

Many Cutting, Punching, and Press Machine Setters, Operators, and Tenders (Metal and Plastic) belong to a union such as the International Association of Machinists and Aerospace Workers; International Union of Electronic, Electrical, Salaried Machine, and Furniture Workers; the International Brotherhood of Electrical Workers; and the United Steelworkers of America.

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California's Job Outlook and Wages

The California Outlook and Wage table below represents the occupation across all industries.

Standard Occupational Classification	Estimated Number of Workers 2004	Estimated Number of Workers 2014	Average Annual Openings	2006 Wage Range (per hour)
Cutting, Punching, and Press Machine Setters, Operators, and Tenders (Metal and Plastic)				
51-4031	20,600	18,300	480	$9.55 to $15.40

Wages do not reflect self-employment.
***Average annual openings** include new jobs plus net replacements.*
Source: www.labormarketinfo.edd.ca.gov, Employment Projections by Occupation and OES Employment & Wages by Occupation, Labor Market Information Division, Employment Development Department.

Trends

Overall employment growth in the various Cutting, Punching, and Press Machine Setters, Operators, and Tenders occupations will decline slightly between 2004-2014. However employment trends among these occupations will vary over the next several years. Employment of workers will be affected by the rate of technological implementation, the demand for the goods they produce, the effects of trade, and the reorganization of production processes. Despite these factors, a large number of these jobs will become available due to an increase in baby boomer retirements. Temporary employees are being hired in greater numbers and usually get paid less than company-employed workers.

Training/Requirements/Apprenticeships

A few weeks of on-the-job training is sufficient for most workers to learn basic machine operations, but several years are required to become a highly skilled operator or setter. Community colleges and other educational institutions offer courses and certifications in operating metal and plastics machines. Programs accredited to the National Institute for Metalworking Skills (NIMS) and the Society of the Plastics Industry are listed at their respective Web sites. Some employers send promising machine tenders to operator classes and others prefer to hire workers who have completed, or are currently enrolled in, a training program. Many employers require a high school diploma and the ability to read, write, and speak English.

Recommended High School Course Work

High school students interested in this kind of work should take courses in metal shop and blueprint reading, gain a working knowledge of the properties of metals and plastics, and have a solid math background with course work in algebra and geometry.

Where Do I Find the Job?

Direct application to employers remains one of the most effective job search methods. Use the *Search for Employers by Industry* feature on the *Career Center* page at www.labormarketinfo.edd.ca.gov to locate employers in your area. Search using keywords from the following industry names to get a list of private firms and their addresses:

- All Other Plastics Products
- Aluminum Foundries (except Die-Casting
- Employment Placement Agencies
- Ornamental and Architectural Metal Work
- Professional Employer Organizations
- Sheet Metal Work

Cutting, Punching, and Press Machine Setters, Operators, and Tenders

- Fabricated Structural Metal
- Iron and Steel Mills
- Nonpackaging Plastics, Film and Sheet
- Steel Foundries (except Investment)
- Temporary Help Services
- Urethane and Other Foam Products

Search these **yellow page** headings for listings of private firms:

- Foundries
- Metal Fabricators
- Ornamental Metal Work
- Plastic Fabricators
- Sheet Metal
- Steel Fabricators

Where Can the Job Lead?

Advancement for Cutting, Punching, and Press Machine Setters, Operators, and Tenders usually takes the form of higher pay. There are some limited opportunities to move up to higher level positions which may be enhanced by becoming certified in a particular machining skill. Some set-up workers may advance to supervisory positions.

Other Sources of Information

International Association of Machinists and Aerospace Workers
www.iamaw.org

The National Institute for Metalworking Skills (NIMS)
www.nims-skills.org

National Tooling & Machining Association (NTMA)
www.ntma.org

Precision Machined Products Association (PMPA)
www.pmpa.org

Precision Metalforming Association (PMA) Educational Foundation
www.pmaef.org

The Society of the Plastics Industry
www.socplas.org